


This MotoCAP safety rating applies to:

Brand: Macna
Model: Tundra 2 WP
Type: Glove - Leather
Date purchased: 17 June 2022
Sizes tested: M and 2XL
Test glove gender: Male
Style: All Purpose
RRP: \$99.95

Test Results Summary:

	Rating	Score
MotoCAP Protection Rating	★★	2.7
Abrasion	9/10	4.58
Seam strength	4/10	7.3
Impact	1/10	1.6
Water resistance	10/10	0.1

This glove is fitted with impact protectors for the knuckles only. There is no provision for ventilation to allow airflow movement through the glove.

Gloves - Crash Impact Risk Zones

This diagram is a pictorial representation of the crash impact risk Zones.


Impact protection

Knuckles
 Palm

Zone 1

High risk of impact
High risk of abrasion

Zone 2

High risk of abrasion

Zone 3

Medium risk of abrasion

Abrasion Resistance

The gloves were tested for abrasion resistance in accordance with MotoCAP test protocols. The diagram below is a visual indication of the likely abrasion performance of the materials in each Zone calculated from the data in the table below. The colour coding is based on the worst performing material in each zone.



Abrasion Resistance Performance

Abrasion rating	9/10
Abrasion score	4.58

Determining Criteria	Area	Good	Acceptable	Marginal	Poor
High abrasion risk	Zone 1 & 2	> 4.0	2.7 - 4.0	1.2 - 2.6	< 1.2
Medium abrasion risk	Zone 3	2.5	1.8 - 2.5	0.8 - 1.7	< 0.8

Individual Abrasion Resistance Results: - The table below shows the test results for time to abrade through all layers of the materials. Calculated for each sample by Zone, type and area coverage of each material as a proportion of that Zone. Abrasion times are capped at a maximum of 10.00s.

Abrasion time for each test (seconds)

Zones	Coverage (%)	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Average	
Zone 1									
Material A	50%	10.00	10.00	10.00	10.00	10.00	10.00	10.00	G
Material B	50%	5.68	2.90	2.56	2.81	2.47	3.09	3.25	A
Zone 2									
Material B	100%	5.68	2.90	2.56	2.81	2.47	3.09	3.25	A
Zone 3									
Material B	40%	5.68	2.90	2.56	2.81	2.47	3.09	3.25	G
Material C	60%	1.95	0.91	1.51	1.43	1.43	2.77	1.67	M

Details of materials used in glove - derived from manufacturer provided information

Material A	Leather shell over rubber armour with fabric inner liner
Material B	Leather shell, water-resistant layer, cushion layer and fabric inner liner
Material C	Woven fabric shell, water-resistant layer, cushion layer and fabric inner liner

Seam Tensile Strength

The tensile strength of the gloves seams and glove restraint (the force required to drag off a properly fastened glove) were tested in accordance with MotoCAP test protocols. The diagram below illustrates the tensile strength and wrist restraint results in terms of the likely performance of the glove in a crash and is a pictorial representation of the data from the tables below.



Seam Strength Performance

Seam strength rating	4/10
Seam strength score	7.3

Determining Criteria	Unit	Good	Acceptable	Marginal	Poor
Seam tensile strength	(N/mm)	> 11	9 - 11	6 - 8.9	< 6
Glove restraint	(N)	> 200	100 - 200	50 - 99	<50

Individual Seam Strength Results: - The table below shows the seam tensile strength in newtons per millimeter (N/mm) for each seam tested by Zone and the average result for each Zone.

Seam tensile strength (N/mm)

Area	1	2	3	4	5	Average	
Zones 1 & 2	7.81	8.92	8.74	3.12	8.22	7.36	M
Zone 3	4.67	4.86	6.30	11.24	8.92	7.20	M

Individual Glove Restraint Results: - The table below shows the force required to remove the restrained glove in newtons (N) for each of the five gloves tested and the average result.

Glove restraint (N)

Glove	1	2	3	4	5	Average	
Wrist restraint	400.0	400.0	400.0	400.0	400.0	400.0	G

Impact Protection

The glove was tested for impact protection and coverage in accordance with MotoCAP test protocols. The diagram below is a visual indication of the likely performance of each impact protector calculated from the data in the table below. The colour coding is based on the worst performing score for average or maximum force for each impact zone. Areas shaded black are not considered in the impact protection ratings.



Impact Protection Performance

Impact rating 1/10
Impact score 1.6

Determining Criteria	Unit	Good	Acceptable	Marginal	Poor
Impact force	(kN)	< 2	2 - 4.9	5 - 8	> 8

* Poor may also indicate that no impact protector is present in the glove

Impact Protector Results: - The table below shows the test results for each strike on each impact protector in kilonewtons (kN) and their area of coverage in percentage (%) within the Zone. Impact forces are capped at a maximum of 10.0kN.

Impact protector type	Knuckles	Palm
Average force (kN)	7.1 M	P
Maximum force (kN)	7.9 M	P
Coverage of zone 1 area	110%	0%

Individual test results: - The table below shows the test results for each strike on each impact protector in kilonewtons (kN) and the position of the strike. Impact forces are capped at a maximum of 10.0kN.

Impact protector type	Knuckles			Palm	No impact protector present	
	Strike number	1	2		3	1
Impact Protector 1		6.4	6.9	7.2		
Impact Protector 2		7.6	7.3	7.8		
Impact Protector 3		6.9	6.3	7.9		

Water spray and rain resistance

This glove is advertised as water-resistant, and so has been tested for water spray and rain resistance according to the MotoCAP test protocols. The table below shows the water absorbed (ml) and the wetting proportion (%) of the glove and under-glove due to water absorption.

	Water absorbed by glove		Water absorbed by cotton glove	
	Volume (ml)	Percentage (%)	Volume (ml)	Percentage (%)
Pair 1	76.9	38%	0.30	1.5%
Pair 2	57.7	30%	0.10	0.5%
Average	67.3	34%	0.20	1.0%

Location of wetting:

There was no visible wetting to the cotton under-glove in all four of the gloves tested.

Assessment Details.

Brand	Macna
Model	Tundra 2 WP
Type	Glove - Leather
Date purchased	17 June 2022
Tested by	AMCAF, Deakin University
Report approved by	MotoCAP Chief Scientist
Garment test reference	G21L10
Rating first published	August 2022
Rating updated	19 September 2022